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EXAMINER

KERNS, KEVIN P

ART UNIT

PAPER NUMBER

1725

DATE MAILED: 06/13/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/512,815

Applicant(s)

DAL PAN, ALFREDO

Examiner

Kevin P. Kerns

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 May 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 17-28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 17-28 is/are rejected.
- 7) ☒ Claim(s) 17,18 and 27 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 2/25/00 and 11/18/02 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings are objected to because they lack distinguishing shading of various materials (metal, sand etc.) and appropriate three-dimensional structural features, which are necessary to obtain a clear understanding of the apparatus. Appropriate correction is required. See MPEP 608.02 and 37 CFR 1.84(m).
2. The drawings are objected to because sand "F" should have its line/arrow directed further to the left (rather than pointing to the same region as container C) in Figure 2. Also in Figure 2, it appears as though the symbol "T" (to the left of sand "F") should be deleted, as a gripping formation T is (correctly) present in the vicinity of reference numbers 110 and 112 in the center of Figure 2. In Figure 3, a reference number "22" should be added with its line directed to the entire structure, as this entire structure of Figure 3 is a filling substation 22. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

3. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: in claims 27 and 28, there is no description of "handling means", "processing means", and "marking means" in the specification.

4. The disclosure is objected to because of the following informalities: on page 14, 7th line, it is unclear what is meant by "plate T", as "T" is a gripping formation and there is no "plate" disclosed anywhere else in the specification. Appropriate correction is required.

Claim Objections

5. Claims 17, 18, and 27 are objected to because of the following informalities: in claim 17, 11th line, a comma should be added after "models" for further clarity. In claim 18, 2nd line, "position" should be changed to "positions". In claim 27, 4th line, the 2nd instance of "models" should be changed to "model". Appropriate correction is required.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 27 and 28 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

With regard to claim 27, it is unclear what structure is being claimed in the limitation "means for transferring said models to said positioning means". The applicant is requested to identify a reference number corresponding to these "means for transferring".

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Claim 27 recites the limitation "said handling means" and "the handling means". There is insufficient antecedent basis for this limitation in the claim. It is unclear whether the "handling means" should instead be one of the sets of gripping means. The applicant is requested to identify a reference number corresponding to this/these structure(s).

With regard to claim 28, it is unclear what structures correspond to the "marking means" and the "processing means". The applicant is requested to identify a reference number corresponding to this/these structure(s).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

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10. Claims 17-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Edge (US 4,844,142) in view of either Travillian (US 4,768,567) or Rikker (US 4,947,923).

Edge discloses a lost foam casting apparatus with a sand depositing mechanism (hopper), in which a series of molds (containers) are arranged around a supporting turntable conveyor with an associated vibratory platform (abstract; column 1, lines 5-9 and 21-30; column 3, lines 57-66; and Figures 1-9). The mold has a pattern P, in which the pattern is flexibly supported within a flask at the proper level by a carrier ring (model gripping means) with a pattern-supporting collar 25b having springs 25c, serving in part as positioning means for the pattern (column 3, lines 6-25; and Figures 8 and 9). Rigid radial arms 25a, connected with the pattern-supporting collar 25b and springs 25c (which are in turn connected to the model, or pattern P), have their opposite ends connected to an annular inversely disposed channel 25 (upside down "U" shape) fitting over the top edge of the container, serving as an integral container clamping means (column 3, lines 11-25; and Figures 8 and 9). As a result, the "positioning means" include structures 25, 25a, 25b, and 25c, which simultaneously clamp both the model (pattern) and the container (column 3, lines 11-25; and Figures 8 and 9). Vertical movement of the containers is enabled by mobile equipment in the form of a hydraulic cylinder cooperating with connecting arms (column 3, lines 26-51; and Figures 1 and 2). The containers are clamped (other container gripping means) while on the vibratory platform 46 for positioning the container (column 3, lines 51-55; and Figure 2). The operator of the apparatus will place a channel ring R over the top edge of the mold and

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flexibly dispose the pattern P it carries into position within the mold (column 6, lines 47-66; column 7, lines 13-21; and Figure 8). One of ordinary skill in the art would have recognized that, while vibrational forces are applied to the container containing the sand and pattern P, both structures are connected by common elements that would allow vibration essentially as a connected single piece. Although Edge discloses an integral positioning means that clamp both the model and the container, the flexible connection (springs 25c) provided between the container and pattern during the vibratory process would not provide the model(s) in a firm, fixed position with respect to the container, differing with the teachings of Edge.

However, Travillian discloses a multiple-station sand fill apparatus for lost foam casting in which an expendable pattern 12 is embedded in sand to form a lost foam casting mold (abstract; column 1, lines 5-14; column 3, lines 6-15; and Figures 1 and 3). The apparatus contains means for vibrating the flask (32,34) during sand fill from a supply hopper (36,38) to promote dense packing and to reduce pattern distortion (column 2, lines 15-26 and 50-56; column 3, lines 37-54; column 4, lines 51-52; column 5, lines 39-47; and Figures 1 and 3). The pattern 12 is held by a fixture 48 with associated pattern engagement clamp 50 mounted to container lower wall 44 for gripping (positioning means) in a desired position within (or initiating removal from) the flask (column 2, lines 36-44; column 3, lines 64-68; column 4, lines 1-15 and 34-44; column 5, lines 7-9; and Figures 1 and 3). Clamp 50 comprises an air-inflatable ring 54 within an annular housing 56 connected to airline 58, such that, when ring 54 is inflated, the model/pattern would be rigidly gripped in a fixed position during vibration, the

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advantage of which includes a more dense and even packing of sand within the pattern cavities during the vibration process, to thereby prevent pattern distortion (column 4, lines 1-11, 35-38, and 51-52; column 5, lines 21-47; and Figure 1).

In addition, Rikker discloses a method and apparatus for evaporative pattern (lost-foam) casting in which the apparatus is comprised of multiple operation stations connected by conveyors, sand feeding means (hopper) with associated loading means, supporting means (frame) with associated vibration means, vertically-adjusting (bracket-like) mobile equipment elements, as well as handling, transfer, and positioning means (insertion and removal device) that sustain (clamp) the models (patterns) during feeding of sand (abstract; column 6, lines 19-29, 42-46, and 58-60; column 7, lines 14-52; column 9, lines 30-44 and 66-68; column 10, lines 1-5, 14-28, and 34-42; column 12, lines 22-37; column 14, lines 34-68; column 15, line 1; column 16, lines 44-47; column 25, lines 54-66; column 26, lines 8-31; and Figures 1-3, 11-13, 16-18, 21, and 22). The model/pattern clamping means include a gripping chuck 110 for holding pattern 112 in jaws 114, in which the jaws 114 maintain a fixed orientation of the pattern 112 in the container during dispensing of molding medium (sand), for the purpose of facilitating automatic processing of a formed casting (column 14, lines 52-68; column 15, line 1; and Figures 11, 13, 21, and 22).

It would have been obvious to one of ordinary skill in the art at the time the applicant's invention was made to modify the apparatus of Edge, by adding the rigid, fixed model positioning means of either Travillian or Rikker, in order to obtain a more dense and even packing of sand within the pattern cavities during the vibration process,

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to thereby prevent pattern distortion (Travillian; column 4, lines 1-11, 35-38, and 51-52; and column 5, lines 21-47), and in order to facilitate automatic processing of a formed casting (Rikker; column 14, lines 52-68; and column 15, line 1).

11. Claims 24-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Edge (US 4,844,142) in view of either Travillian (US 4,768,567) or Rikker (US 4,947,923), as applied to claims 17 and 21-23 above, and further in view of McMellon (US 4,736,787).

Edge (in view of either Travillian or Rikker) disclose and/or suggest the elements of claims 17 and 21-23 above. Neither Edge, Travillian, nor Rikker specifically teaches centering elements for accurate positioning of elements in the apparatus, as well as a system that would recognize the status of the components of the system via identification signals.

However, McMellon discloses a lost foam handling system in which a plurality of stations comprised of gondolas on rails individually contains alignment means to position the flask-carrying gondolas relative to the compaction and dump stations, the positioning (alignment) device of which contains clevis-like (fork structure) and tongue-like members with a pivotally connected interlocking pin therebetween (abstract; column 3, lines 10-51; column 5, lines 5-11 and 17-29; and Figures 1-5). A controller that provides position and status signals to operate the conveyor and associated components include a programmable microprocessor to actuate the sequence at each of the plurality of stations (abstract; column 4, lines 48-66; and Figures 1 and 2). These

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features are advantageous for providing an automated conveyance system for lost foam casting with proper alignment and operation speeds at various stations to allow the system to be tailored to meet the specific needs and resources desired where the controller is installed (column 1, lines 6-15; column 2, lines 54-57; column 4, lines 61-66; and column 5, lines 5-11).

It would have been obvious to one of ordinary skill in the art at the time the applicant's invention was made to modify the apparatus of Edge, by adding the rigid, fixed model positioning means of either Travillian or Rikker, and by further adding the lost foam system containing positioning (alignment) means, as well as a programmable microprocessor, both of which are disclosed by McMellon, in order to provide an automated conveyance system for lost foam casting with proper positioning alignment and operation speeds at various stations to allow the system to be tailored to meet the specific needs and resources desired where the controller is installed (McMellon; column 1, lines 6-15; column 2, lines 54-57; column 4, lines 61-66; and column 5, lines 5-11).

Response to Arguments

12. The examiner acknowledges the applicant's amendment after final (paper #15) and request for continued examination (paper #18), received by the USPTO on March 24, 2003 and May 1, 2003, respectively. The applicant's amendment has overcome the prior objections to the specification and claim 23. However, new objections to the drawings, specification, and claims are raised in paragraphs 1-5 above. New claim

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rejections under 35 USC 112, 2nd paragraph are also cited above. Claims 17-28 remain under consideration in the application.

13. Applicant's arguments with respect to claims 17-28 have been considered but are moot in view of the new ground(s) of rejection. It is noted that additional underlined portions in paragraph 10 above set forth further details about the Edge reference, which were not previously stated in the prior office action (final rejection mailed December 23, 2002).


Conclusion

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin P. Kerns whose telephone number is (703) 305-3472. The examiner can normally be reached on Monday-Friday from 8:00am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Dunn can be reached on (703) 308-3318. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-7718 for regular communications and (703) 305-6078 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

KPK
kpk
June 8, 2003


ALEXANDRA ELVE
PRIMARY EXAMINER